

What is claimed is:

1. A data broadcast receiving apparatus capable of supporting an interactive service, comprising:
  - 5 a demultiplexing means for dividing signals transmitted from the outside into signals of a kind;
  - a controlling means for controlling elements of the data broadcast receiving apparatus, receiving and outputting contents divided in the demultiplexing means;
  - 10 a download processing means for receiving downloadable data divided in the demultiplexing means, determining the kind of the downloadable data, and performing upgrade by downloading the downloadable data; and
  - a mobile terminal accessing means for accessing to a  
15 mobile communication network based on the downloadable data.
2. The data broadcast receiving apparatus as recited in claim 1, wherein the controlling means includes:
  - 20 a middleware processing means for processing middleware of the data broadcast receiving apparatus, controlling the download processing means, receiving a middleware module and a middleware plug-in software included in the downloadable data from the download  
25 processing means; and
  - an operating means for operating the data broadcast receiving apparatus and controlling the middleware processing means and the mobile terminal accessing means.
- 30 3. The data broadcast receiving apparatus as recited in claim 1, wherein the download processing means determines the kind of the downloadable data by using a downloadable data information descriptor describing data broadcast specification information.

4. The data broadcast receiving apparatus as recited in claim 3, wherein the downloadable data information descriptor includes at least one among Program Specific Information (PSI) of the Moving Picture Experts Group (MPEG)-2 system, Data Service Table (DST) of the Advanced Television Systems Committee (ATSC) data broadcasting, Application Information Table (AIT) of the DVB-Multimedia Home Platform (MHP), and System Information (SI) of the Digital Multimedia Broadcasting (DMB).

10

5. A method for upgrading software by using downloaded data inputted from the outside in a data broadcast receiving apparatus, comprising the steps of:

- a) selecting downloadable data from broadcast stream in the data broadcast receiving apparatus;
- b) determining the kind of the downloadable data; and
- c) upgrading the software according to the kind of the downloadable data.

6. The method as recited in claim 5, wherein the step a) includes:

- a1) monitoring the presence of a downloadable data information descriptor in the broadcast stream; and
- a2) extracting data identification information from the downloadable data information descriptor.

7. The method as recited in claim 6, wherein the downloadable data information descriptor includes at least one among Program Specific Information (PSI) of the Moving Picture Experts Group (MPEG)-2 system, Data Service Table (DST) of the Advanced Television Systems Committee (ATSC) data broadcasting, Application Information Table (AIT) of the DVB-Multimedia Home Platform (MHP), and System Information (SI) of the Digital Multimedia Broadcasting (DMB).

8. The method as recited in claim 7, wherein the kind of the downloadable data is determined based on the data identification information in the step b).

5

9. The method as recited in claim 5, wherein the kind of the downloadable data includes a middleware module for accessing to a mobile communication terminal and a middleware plug-in.

10

10. The method as recited in claim 9, wherein the step c) includes the steps of:

c1) upgrading the software by using the middleware module; and

15

c2) upgrading the software by using the middleware plug-in.

11. The method as recited in claim 10, wherein the step c) includes the steps of:

20

c3) determining whether the version of the downloaded middleware module is the same as the version of the pre-established middleware version; and

c4) setting up the downloaded middleware module, if the version of the downloaded middleware module is not the same as the version of the pre-established middleware version.

12. The method as recited in claim 11, wherein the step c) includes the steps of:

30

c5) suspending an application in execution temporarily; and

c6) executing the temporarily suspended application after the setup of the middleware module.

35

13. The method as recited in claim 10, wherein the

step c2) includes the steps of:

c2-1) checking whether the Multipurpose Internet Mail Extensions (MIME) format of the downloaded middleware plug-in is registered;

5 c2-2) if the format of the downloaded middleware plug-in is new, registering the format of the downloaded middleware plug-in; and

c2-3) setting up the downloaded middleware plug-in.

10 14. The method as recited in claim 5, further comprising the step of:

d) receiving and processing a request for accessing to a mobile communication network from the user.

15 15. The method as recited in claim 14, wherein the step d) includes the steps of:

d1) checking whether the downloadable data include a module capable of accessing to a mobile terminal;

20 d2) if the access to the mobile terminal is possible, checking whether the request for accessing to the mobile communication network from the user can be executed; and

d3) if the request for accessing to the mobile communication network from the user can be executed, accessing to the mobile communication network by executing user authentication and a mobile terminal accessing program.

16. The method as recited in claim 15, wherein whether the request for accessing to the mobile communication network from the user can be executed is determined based on module information of the mobile terminal of the user or communication company information.

17. A data broadcast receiving apparatus supporting an interactive service, comprising:

• , " ,

a demultiplexing means for dividing signals from the outside into signals of a kind;

a controlling means for controlling elements of the data broadcast receiving apparatus, receiving and  
5 outputting contents divided in the demultiplexing means;

a download processing means for receiving downloadable data divided in the demultiplexing means, determining the kind of the downloadable data, and performing upgrade by downloading the downloadable data; and

10 a mobile terminal accessing means for accessing to a mobile communication network based on the downloadable data.